

CLAIMS

(As Amended under PCT Article 34)

1. (Amended) An image read/write head comprising:

5 a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits for providing drive control of the printing elements;

10 a case mounted on the substrate for surrounding the plurality of light receiving elements;

a transparent cover mounted to the case for contact with a document being transferred;

a light source disposed in the case for illuminating the document; and

15 a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the document illuminated by the light source;

20 the transparent cover and the plurality of printing elements being provided on a same surface side of the substrate for arranging a platen roller for a document and a platen roller for a recording paper on the same surface side of the substrate, the plurality of printing elements being provided on the substrate at a portion projecting beyond the case;

25 the image read/write head further including supporting means for supporting at least one of the platen rollers.

2. The image read/write head according to claim 1, wherein the case and the supporting means are integrally molded of a resin.

5 3. The image read/write head according to claim 1, wherein each of the printing elements comprises a heating element, the substrate being mounted to a heat sink plate, part of the heat sink plate providing the supporting means.

10 4. The image read/write head according to claim 1, wherein the plurality of light receiving elements, the plurality of printing elements and the plurality of drive IC chips are mounted on a same surface of the substrate.

15 5. The image read/write head according to claim 4, wherein the light receiving elements are integrally built in the drive IC chips.

20 6. (Amended) The image read/write head according to claim 1, wherein the case has an outer side surface extending above the substrate substantially in parallel with the printing elements, the outer side surface being so inclined as to become farther from the printing elements as it extends upward, the transparent cover being mounted to the case and inclined
25 relative to the substrate oppositely to the outer side surface.

7. (Amended) An image processing apparatus comprising an image read/write head and a pair of platen rollers for a document and a recording paper, respectively,

the image read/write head including:

5 a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits for providing drive control of the printing elements;

10 a case mounted on the substrate for surrounding the plurality of light receiving elements while avoiding the plurality of printing elements;

a transparent cover mounted to the case for contact with a document being transferred;

15 a light source disposed in the case for illuminating the document; and

a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the document illuminated by the light source; and

20 supporting means for supporting at least one of the paired platen rollers;

each of the platen rollers being held by a member provided separately from the image read/write head;

25 the supporting means being fitted on a shaft portion of the recording paper platen roller for allowing pivotal movement of the image read/write head about the shaft portion;

the image read/write head being biased by an elastic member in a pivotal direction for pressing the transparent cover against the document platen roller.

8. An image read/write head comprising:

a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits
5 for providing drive control of the printing elements;

a case mounted on the substrate for surrounding the plurality of light receiving elements while avoiding the plurality of printing elements;

a transparent cover mounted to the case for contact
10 with a document being transferred;

a light source disposed in the case for illuminating the document; and

a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the
15 document illuminated by the light source;

the plurality of light receiving elements, the plurality of printing elements and the plurality of drive IC chips being mounted on a same surface of the substrate;

the image read/write head further including a
20 reflection preventing member provided separately from the case for collectively surrounding the plurality of light receiving elements and the plurality of drive IC chips.

9. The image read/write head according to claim 8, wherein
25 the reflection preventing member is black.

10. The image read/write head according to claim 8, wherein the reflection preventing member includes mounting means for positioning and mounting the reflection preventing member with respect to the case.

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11. The image read/write head according to claim 8, wherein the reflection preventing member includes an upper wall facing but spaced from the plurality of light receiving elements and the plurality of drive ICs thicknesswise of the substrate, the upper wall including a slit for allowing light traveling through the plurality of lenses to reach the plurality of light receiving elements, the reflection preventing member also including a plurality of elastically deformable side walls projecting from the upper wall toward the substrate into contact therewith.

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12. The image read/write head according to claim 11, wherein the substrate is black at least at portions in contact with the plurality of side walls.

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13. The image read/write head according to claim 8, wherein the light source is mounted beside the plurality of light receiving elements on said surface of the substrate on which the plurality of light receiving elements are mounted;

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the reflection preventing member including a side wall for separating the light source from the plurality of light receiving elements.

14. (Deleted)

15. (Amended) An image read/write head comprising:

5 a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits for providing drive control of the printing elements;

10 a case mounted on the substrate for surrounding the plurality of light receiving elements while avoiding the plurality of printing elements;

a transparent cover mounted to the case for contact with a document being transferred;

a light source disposed in the case for illuminating the document;

15 a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the document illuminated by the light source; and

detecting means for detecting the document fed onto the transparent cover;

20 the detecting means including a movable member having one end for contacting the document in the document transfer path, the movable member having another end for facing the light source;

25 the movable member being so arranged that said another end blocks light traveling from the light source toward the transparent cover when said one end is out of contact with the document, whereas said another end retreats to a position

which does not block the light when said one end is in contact with the document.

16. (Amended) An image read/write head comprising:

5 a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits for providing drive control of the printing elements;

10 a case mounted on the substrate for surrounding the plurality of light receiving elements while avoiding the plurality of printing elements;

 a transparent cover mounted to the case for contact with a document being transferred;

15 a light source disposed in the case for illuminating the document;

 a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the document illuminated by the light source; and

20 detecting means for detecting the document fed onto the transparent cover;

 the detecting means including a movable member having one end for contacting the document in the document transfer path, the movable member having another end arranged in a light path extending from the transparent cover to the plurality
25 of light receiving elements;

 the movable member being so arranged that said another end blocks light traveling from the transparent cover toward

the plurality of light receiving elements when said one end is out of contact with the document, whereas said another end retreats to a position which does not block the light when said one end is in contact with the document.

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17. (Amended) An image read/write head comprising:

a substrate which carries a plurality of light receiving elements, a plurality of printing elements and a plurality of drive IC chips incorporating driving circuits for providing drive control of the printing elements;

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a case mounted on the substrate for surrounding the plurality of light receiving elements while avoiding the plurality of printing elements;

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a transparent cover mounted to the case for contact with a document being transferred;

a light source disposed in the case for illuminating the document;

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a plurality of lenses disposed in the case for forming, on the plurality of light receiving elements, an image of the document illuminated by the light source; and

detecting means for detecting the recording paper fed to a position facing the plurality of printing elements;

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the detecting means including a movable member having one end for contacting the recording paper in a recording paper transfer path, the movable member having another end arranged in a light path extending from the transparent cover to the plurality of light receiving elements;

the movable member being so arranged that said another
end moves between a position for blocking light traveling from
the transparent cover toward the plurality of light receiving
elements and a position which does not block the light
5 depending on whether or not said one end is in contact with
the recording paper.

18. An image read/write head comprising:

10 a substrate which carries a plurality of light
receiving elements, a plurality of printing elements and a
plurality of drive IC chips incorporating driving circuits
for providing drive control of the printing elements;

15 a case mounted on the substrate for surrounding the
plurality of light receiving elements while avoiding the
plurality of printing elements;

a transparent cover mounted to the case for contact
with a document being transferred;

a light source disposed in the case for illuminating
the document; and

20 a plurality of lenses disposed in the case for forming,
on the plurality of light receiving elements, an image of the
document illuminated by the light source;

the plurality of light receiving elements, the
plurality of printing elements and the plurality of drive IC
25 chips are mounted on a same surface of the substrate;

the image read/write head further including:

supporting means for supporting a platen roller

disposed in facing relationship to at least either one of the transparent cover and the plurality of printing elements;

a reflection preventing member provided separately from the case for collectively surrounding the plurality of
5 light receiving elements and the plurality of drive IC chips;
and

detecting means for detecting at least one of the document fed onto the transparent cover and a recording paper fed to a position facing the plurality of printing elements.

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